U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

APPEAL BRIEF TRANSMITTAL AND REQUEST FOR EXTENSION OF TIME	Docket Number: **10191/1583**	Conf. No. **9602**

Application Number	Filing Date	Examiner	Art Unit
09/673,063	**January 4, 2001**	**Michael P. Stafira**	**2877**

Invention Title	Inventor
RAIN SENSOR	**Gebhard MICHENFELDER et al.**

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Signature: _____
Jong H. Lee

Further to the Notice of Appeal filed April 10, 2002 in the above-referenced application, enclosed are three copies of an Appeal Brief. Accompanying the Appeal Brief is the Appendix to the Appeal Brief.

The Commissioner is hereby authorized to charge payment of the 37 C.F.R. § 1.17(c) appeal brief filing fee of $320.00, a two-month extension of time fee of $400, and any additional fees associated with this communication to the deposit account of **Kenyon & Kenyon**, deposit account number **11-0600**.

Dated: 8/12, 2002

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#14 Appeal Brief

[10191/1583]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Gebhard MICHENFELDER et al.
Serial No.	:	09/673,063
Filed	:	January 4, 2001
For	:	RAIN SENSOR
Examiner	:	Michael P. Stafira
Art Unit	:	2877
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APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

Applicants filed a Notice of Appeal dated April 1, 2002 (filed in the PTO on April 10, 2002), appealing from the Final Office Action dated October 31, 2001, finally rejecting claims 20-41 of the above-identified application. This Brief is submitted by Applicants in support of their appeal.

I. REAL PARTY IN INTEREST

The above-identified Applicants and Robert Bosch GmbH of Stuttgart, Germany, are the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal is known to the undersigned attorney or is believed by the undersigned attorney to be known to Applicants.

III. STATUS OF CLAIMS

Claims 20-41 are pending in this application. Applicants appealed from the final rejection of claims 20-41 made in the final Office Action mailed by the Patent Office on October 31, 2001. Of the claims presently on appeal, claim 20 is independent, and claims 21-41 ultimately depend from claim 20. The claims on appeal are set forth in the Appendix submitted herewith.

IV. STATUS OF AMENDMENTS

No amendment has been made to the claims subsequent to the final Office Action dated October 31, 2001.

V. SUMMARY OF THE INVENTION

The present invention relates to a rain sensor, for motor vehicles in particular, comprising one measuring distance having at least one transmitter and at least one receiver for electromagnetic waves (light waves), a windshield being arranged in the measuring distance, and the measuring distance influencing the wave propagation between the at least one transmitter and the at least one receiver in such a way that when a coating forms on the windshield, in particular as the result of wetting by precipitation, an output signal sensed by the receiver is changed, characterized in that the optical and electronic components of the rain sensor are mounted in a housing, a light conducting element forming a cover of the housing. (Abstract).

An exemplary rain sensor according to the present invention includes only three single parts that are required for its construction. This exemplary rain sensor is essentially made up of a housing (e.g., rectangularly shaped), from which electrical conductors for the connection to a downstream

analysis unit are guided, a printed circuit board, and a light conducting element, which may include necessary optical lens structures. (Fig. 1a; p. 1, line 25 to p. 2, line 1). This manner of construction advantageously provides a very compact and easily mountable rain sensor, which may be cost-effectively produced in mass production. After production, the rain sensor may be mounted to a windshield of a motor vehicle, for example, using a transparent film, which may be self-adhesive on both sides, without having an adverse effect on optical characteristics. (P. 2, lines 1-4).

In another exemplary rain sensor according to the present invention, the light conducting element simultaneously forms a cover of the rain sensor housing, thereby forming a single composite housing unit. (Fig. 3; p. 2, lines 13-15). In this manner, a compact structure is achieved, which may permit automotive manufacturers to quickly and cost-effectively install the rain sensor without difficulty. (P. 2, lines 15-20).

Figure 1b shows a diagrammatic plan view of an exemplary rain sensor 4. The rain sensor 4 includes a connector 38 for the electrical connection to a downstream analysis unit (not shown). Connector 38 may include any number of connector pins, such as four or eight connector pins, which penetrate through the housing to the printed circuit board, where they are soldered or pressed to produce an electrical connection. (Fig. 1b; p. 4, lines 13-19).

All required electronic and optoelectronic components are mounted on the printed circuit board, for example, using SMD (surface mounted device) technology. (Fig. 2; p. 2, lines 6-7). This permits the design of very compact sensors, which may be mounted without difficulty, for example, behind an interior rear-view mirror on the inside of the windshield. (Figs. 1a, 1b; p. 2, lines 7-11).

The optoelectronic components include at least one transmitter, such as a light emitting diode (LED), operable to transmit an electromagnetic wave (e.g., visible or infrared light) as a directional light beam. The light beam strikes the windshield at an acute angle and, when no rain is present, completely reflects due to the refractive index of the windshield's outer boundary surface. The reflected light beam then strikes a receiver, such as a

photodiode, mounted to the printed circuit board. If water is present on the windshield at the sight of reflection, for example, due to precipitation, fog, wetting, etc., the refractory behavior of the windshield changes -- this may result in a portion of the light beam not being completely reflected at the boundary surface, but instead being scattered to the outside. This scattering causes the intensity of the reflected light beam to attenuate, the attenuation being detected by the photodiode as the presence of the water on the windshield. The photodiode then transmits an output signal indicative of the instantaneous degree of wetting of the windshield to the downstream analysis unit. (P. 4, line 33 to p. 5, line 12). Using this signal, the analysis unit may, for example, automatically control various devices, such as a windshield wiper mechanism, a vehicle lighting system, and/or front fog lamps. (P. 2, lines 22-25).

In another exemplary rain sensor according to the present invention, a separate brightness sensor is provided for detecting ambient light. For this purpose, the brightness sensor may generate a signal, for example, that is influenced by sunlight, and may have, for example, a relatively wide conical aperture directed upward (e.g., 40 degrees) for receiving the ambient light. The brightness sensor may be operable to sense specific frequencies of light, such as ultraviolet light (e.g., the brightness sensor may detect light components that are present in sunlight but not in artificial light). In this manner, a signal may be generated for an automatic light control or for a day/night changeover of the windshield wiper control in the motor vehicle in accordance with the ambient light. (P. 2, lines 27-33).

The light conducting element, in addition to forming the cover for the rain sensor, may be used to focus the ambient light. Such a light conducting element may, for example, be produced from a plastic such as PMMA (polymethyl methacrylate) by injection molding. Using PMMA, optical structures, such as convergent lenses, may be formed. If the rain sensor uses infrared light to detect rain, the light conducting element may be produced from black PMMA, with a small clear plastic light passage being provided for the ambient light. This dual-color light conducting element may be produced, for

example, using a two-color injection method or by combining, for example, by gluing or fusing, two single-color plastic parts. (Fig. 2; p. 3, lines 1-9).

VI. ISSUES FOR REVIEW

The following issues are presented for review on appeal in this case:

A) Whether the subject matter of claims 20-24, 27-29, 38 and 41 is anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 5,661,303 to Teder (hereinafter "Teder").

B) Whether the subject matter of claims 25 and 26 is unpatentable under 35 U.S.C. §103(a) over Teder as applied to claim 24, in view of U.S. Patent No. 5,560,245 to Zettler et al. (hereinafter "Zettler").

C) Whether the subject matter of claim 30 is unpatentable under 35 U.S.C. §103(a) over Teder as applied to claim 29, in view of U.S. Patent No. 6,191,531 to Reime (hereinafter "Reime").

D) Whether the subject matter of claims 31 and 32 is unpatentable under 35 U.S.C. §103(a) over Teder as applied to claim 20 in view of U.S. Patent No. 4,701,613 to Watanabe et al. (hereinafter "Watanabe").

E) Whether the subject matter of claims 33 and 34 is unpatentable under 35 U.S.C. §103(a) over Teder as applied to claim 20, in view of U.S. Patent No. 4,871,917 to O'Farrell et al. (hereinafter "O'Farrell").

F) Whether the subject matter of claims 35 and 36 is unpatentable under 35 U.S.C. §103(a) over Teder in combination with O'Farrell as applied to claim 34, and further in view of U.S. Patent NO. 5,225,669 to Hasch et al. (hereinafter "Hasch").

G) Whether the subject matter of claims 37, 39 and 40 is unpatentable under 35 U.S.C. §103(a) over Teder as applied to claim 20, and further in view of Zettler.

VII. GROUPING OF CLAIMS

For purposes of this appeal, claims do not stand or fall together: in addition to arguments which apply to all pending claims 20-41, additional arguments will be presented specifically for each of the dependent claims 21-23,

27, 29, 31, 33 and 37-41. Accordingly, claims 20-24, 27-29, 38 and 41 will be argued as one group; claims 25 and 26 will be argued as another group; claim 30 will be argued as another group; claims 31 and 32 will be argued as another group; claims 33 and 34 will be argued as another group; claims 35 and 36 will be argued as another group; and claims 37, 39 and 40 will be argued as another group.

VIII. ARGUMENTS

A. Rejection of Claims 20-24, 27-29, 38 and 41

The Examiner has rejected claims 20-24, 27-29, 38 and 41under 35 U.S.C. §102(e) as anticipated by Teder. Respectfully, Applicants traverse for the following reasons.

Claim 20 recites a rain sensor comprising, *inter alia*, "a housing including a light conducting element forming a cover of the housing." That is, the housing and the light conducting element **form a single composite housing unit**. (Fig. 3; p. 2, lines 13-15). In this manner, a compact structure is achieved, which permits automotive manufacturers to quickly and cost-effectively install the rain sensor without difficulty. (P. 2, lines 15-20).

Teder purportedly concerns a compact moisture sensor having collimator lenses and a detachable prismatic coupler. Referring to the embodiment illustrated in Figures 2 and 3 of Teder, the moisture sensor includes a prismatic coupler 24, a circuit board 26 for mounting optoelectronic components, and a sensor housing 28 for enclosing both the circuit board 26 and an attachment to the prismatic coupler 24. (See Teder, col. 6, lines 23-28). The prismatic coupler 24 includes a plurality of mounting clips 46 arranged around the periphery of base 42 to secure the sensor housing 28 to the base 42 of the prismatic coupler 24. (See Teder, col. 6, lines 60-65). Clips 46 permit the prismatic coupler 24 to be detached from the housing 28, so that internal emitters and detectors may be mounted inside the housing 28. (See Teder, col. 4, lines 9-14).

To anticipate a claim under § 102, a single prior art reference must identically disclose each and every claim element. See Lindeman

Machinenfabrik v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984). Furthermore, when determining whether a claim is anticipated, the claim must be given its broadest reasonable interpretation consistent with the specification. In re Weiss, 989 F.2d 1202, 26 U.S.P.Q. 2d 1885 (Fed. Cir. 1993). The broad interpretation may not expand the meaning of the claim beyond that which was intended by the inventor as set forth in the specification. Id.

Contrary to the Examiner's assertions, Teder does not identically disclose each and every element of claim 20. While the Examiner contends that Teder identically discloses each and every feature of claim 20, including a housing 28 and prismatic coupler 24 that allegedly form a cover of the housing 28, even a cursory reading of Teder reveals that this reference fails to disclose "a housing including a light conducting element **forming a cover** of the housing," as recited in claim 20. Rather, Teder expressly indicates that the coupler 24 is secured to the inner surface 30 of windshield 18, and Teder describes the coupler 24 as a **completely separate element**. In fact, Teder expressly states that the coupler is designed to be detachable via clips 46, so that internal emitters and detectors may be mounted inside the housing 28. Thus, Teder simply does not disclose that the coupler 24 "forms a cover" of housing 28 as a single composite element, as recited in claim 20.

The Examiner asserts that the specification and Figure 2 of Applicants' invention show that the light conducting element, as recited in claim 20, is separate from the housing. However, Figure 2 of Applicants' specification merely shows an exploded plan view of the rain sensor 4 to easily illustrate its respective components. The Examiner's reliance on the Applicants' specification and Figure 2 is an attempt to improperly broaden claim 20 by reading limitations from the specification into claim 20, which is contrary to the rules of claim interpretation. Claim 20 clearly recites a housing that includes a light conducting element **forming a cover** as the features of the present invention sought to be protected, and the specification may not be used to read additional limitations into the claims.

For at least the foregoing reasons, it is clear that Teder simply does not anticipate claim 20. Furthermore, since claims 21-24, 27-29, 38 and 41

depend from claim 20, Teder does not anticipate claims 21-24, 27-29, 38 and 41. Withdrawal of the rejection of these claims is therefore respectfully requested.

B. Rejection of Claims 25 and 26

The Examiner has rejected claims 25 and 26 under 35 U.S.C. §103(a) as unpatentable over Teder in view of Zettler. Specifically, the Examiner contends that Teder teaches the subject matter of claim 25, except for an integrated connector for an electrical connection to a downstream analysis unit. However, the Examiner also contends that Zettler shows the integrated connector for an electrical connection to a downstream analysis unit for a remote connection sensor, as recited in claim 25.

The printed circuit board recited in claim 20, from which claim 25 depends, contains all required optoelectronic components, such as, for example, an LED and a photodiode. Referring to Figure 1b of the present application, there is seen a diagrammatic plan view of the rain sensor 4 according to Figure 1a. It shows a connector 38 for the electrical connection to a downstream analysis unit. The downstream analysis unit may, for example, variably activate a windshield wiper mechanism and/or a vehicle lighting system using signals delivered to it by rain sensor 4. (P. 4, lines 13-19). In this manner, the analysis circuits are kept separate from the rain sensor.

Teder discloses a moisture sensor having internal processing components 80A, 80B, 80C, and 80D arranged within the housing 28. (See Teder, Fig. 3; col. 8, lines 35-50). These internal components 80A, 80B, 80C, and 80D receive and process signals from the internal light receivers to generate control signals for controlling windshield wipers 20. (See Teder, Fig. 3; col. 9, lines 40-45).

Zettler purportedly concerns a moisture-activated wiper sensor for a wiper control system. (See Zettler, col. 1, lines 40-45). Referring to Figures 1-3 of Zettler, there is seen various views of the moisture-activated wiper sensor. The sensor includes a housing 10 including a case 12 and a cover 14, which snap together as two separate parts. (See Zettler, Figs. 1-3; col. 2, lines 26-30). A socket 22 protrudes from the housing 10 and has an opening 24 for a

connector 46. The connector 46 receives signal and power cables, which connect the sensor to a power source and a wiper motor. (See Zettler; col. 3, lines 10-16). Like Teder, Zettler expressly states that all circuits required to interpret (i.e., analyze) the output of the optical components and to provide control signals for the wiper motor via the connector 46 are located within the housing 10. (See Zettler, Figs. 1-3; col. 3, lines 3-15).

For a claim to be rejected as obvious under 35 U.S.C. § 103, the prior art must teach or suggest each element of the claim, and it must also suggest combining the elements in the manner contemplated by the claim. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 ; and In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990). Furthermore, the Examiner's proposed combination of references may not change the principle of operation of the modified reference. See In re Ratti, 270 F.2d 810 (C.C.P.A. 1959).

Initially, it is noted that claims 25 and 26 ultimately depend from claim 20. Accordingly, the above argument with respect to the anticipation rejection of claim 20 applies equally to claims 25 and 26 and, as such, is incorporated herein by reference without reiteration. Furthermore, Zettler simply does not cure the deficiencies of Teder as applied to claim 20. Specifically, Zettler does not disclose "a housing including a light conducting element **forming a cover** of the housing." For this reason alone, Teder and Zettler, whether considered individually or in combination, simply do not disclose each and every feature of claim 20.

Furthermore, both Teder and Zettler teach away from the Examiner's suggested combination. The rain sensor of claim 25 does not include electronic circuits for analyzing the output of the photodiode, nor does it generate control signals for a wiper motor. Instead, the photodiode output signals are transmitted by the rain sensor to the downstream analysis unit. **It is the downstream analysis unit, not the rain sensor, that analyzes the photodiode output and generates control signals**. In contrast, both Teder and Zettler contain their respective analysis circuits **within their respective housings**. To accept the Examiner's suggested combination would require

removing the analysis circuits from Teder and placing them in an external analysis unit. Only then, would Teder need to be electrically connected to "a downstream analysis unit," as recited in claim 25. However, this proposed modification would undoubtedly increase the size of the moisture sensor and, in the process, frustrate one of the primary objects of Teder, i.e., to provide a more compact sensor, as well as the primary object of Zettler, which is to provide a moisture sensor having "moisture sensing and signal processing functions performed in a single module attached to a windshield." (See Teder, col. 4, lines 63-67; Zettler, col. 1, lines 40-45).

Moreover, the Examiner's proposed combination of Teder and Zettler would impermissibly change the principle of operation of Teder. As described above, to accept the Examiner's suggested combination would require removing the analysis circuits from Teder and placing them in an external analysis unit. Only then would Teder need to be electrically connected to "a downstream analysis unit," as recited in claim 20. However, removing the analysis circuits from Teder would completely change the basic principle under which Teder was designed to operate. Teder was designed to operate as an "all inclusive" single-unit moisture sensor, not a dual-unit moisture sensor and analysis unit.

Regardless, even if Teder were modified to include the connector of Zettler, the proposed modification would not achieve each and every feature of claim 25. As described above, the housing of Zettler includes all circuits required to interpret the output of the optical components and to provide control signals for the wiper motor. (See Zettler, Figs. 1-3; col. 3, lines 3-15). Thus, **there simply is no need to provide an electrical connection to a downstream analysis unit**. The connector 46 merely receives power from an external power unit and provides generated control signals to a wiper motor. Thus, even if Teder were modified to include the connector 46 of Zettler, "an electrical connection to a downstream analysis unit," as recited in claim 25, would not result.

For at least the foregoing reasons, Teder and Zettler, whether considered individually or in combination, do not disclose, teach, or suggest the subject matter of claim 25. As such, Teder and Zettler simply do not render

claim 25 obvious. Furthermore, since claim 26 depends from claim 25, Teder and Zettler also do not render claim 26 obvious for at least the same reasons. Withdrawal of the rejections of claims 25 and 26 is therefore respectfully requested.

C. Rejection of Claim 30

The Examiner has rejected claim 30 under 35 U.S.C. §103(a) as unpatentable over Teder in view Reime. Applicants traverse for the following reasons.

Reime issued on February 20, 2000, and has a § 102(e) date of May 2, 2000. The present application is a national-stage application of International Application No. PCT/DE99/00020 filed on January 8, 1999, which is before the § 102(e) date of Reime. As such, Reime is not an effective prior art as applied to the present application.

However, even if Reime were an effective prior art, claim 30 of the present application would not be obvious over Teder in view Reime. Reime relates to a lighting installation which serves to turn on and turn off the exterior lighting of vehicle. (See Reime, col. 1, lines 10-13). Reime also relates to a device that uses signals for turning on low-beam headlights, in which the device may include a water sensor 19 to detect moisture on a surface. (See Reime, col. 3, lines 25-35). The device discussed in Reime produces a control signal that actuates a switchgear 13 for turning on a lighting installation 11. (See Reime, col. 2, lines 55-57). The control signals of Reime may also influence the control device for the windshield wiper 21. (See Reime, col. 4, lines 1-5). The signals that control the windshield wiper 21 are generated by a water sensor that detects a coating of moisture on a surface, such as the windshield 16. (See Reime, col. 3, lines 32-35).

Initially, it is noted that claim 30 ultimately depends from claim 20. Accordingly, the above argument with respect to the anticipation rejection of claim 20 applies equally to claim 30 and, as such, is incorporated herein by reference without reiteration. Furthermore, Reime simply does not cure the deficiencies of Teder as applied to claim 20. Specifically, Reime does not

disclose "a housing including a light conducting element **forming a cover** of the housing."

Furthermore, the combination of Teder and Reime teaches away from the Examiner's proposed modification. As described above, Teder contains its analysis circuits **within the housing**. To accept the Examiner's suggested combination would require removing the analysis circuits from Teder and placing them in an external analysis unit. Only then would Teder need to provide an output signal to "a downstream analysis unit," as recited in claim 29, from which claim 30 depends. However, this proposed modification would undoubtedly increase the size of the moisture sensor and, in the process, frustrate one of the primary objects of Teder: to provide a more compact sensor. (See Teder, col. 4, lines 63-67).

Moreover, the Examiner's proposed combination of Teder and Reime would impermissibly change the principle of operation of Teder. As described above, to accept the Examiner's suggested combination would require removing the analysis circuits from Teder and placing them in an external analysis unit. Only then would Teder need to be electrically connected to "a downstream analysis unit," as recited in claim 20. However, removing the analysis circuits from Teder would completely change the basic principle under which Teder was designed to operate. Teder was designed to operate as an "all inclusive" single-unit moisture sensor, not a dual-unit moisture sensor and analysis unit.

Regardless, even if Teder and Reime were combined in the manner suggested by the Examiner, the combination of Teder and Reime would not result in the subject matter of claim 30. Reime does not state that water sensor 19 communicates an output signal to a downstream analysis circuit, as recited in Applicants' claim 29, from which claim 30 depends. Reime also does not state that the output signal of the water sensor 19 includes information with respect to an "instantaneous degree of wetting of the windshield," as recited in parent claim 29.

For at least the foregoing reasons, Teder and Reime, whether considered individually or in combination, do not disclose, teach, or suggest the

subject matter of claim 30. As such, it is respectfully requested that the rejection of claim 30 be withdrawn.

D. Rejection of Claims 31 and 32

The Examiner has rejected claims 31 and 32 under 35 U.S.C. §103(a) as unpatentable over Teder in view of Watanabe. Respectfully, Applicants traverse.

Claim 31 recites a rain sensor, in which "the at least one transmitter includes at least one LED." Not only is the meaning of LED notoriously well known in the art, but the Specification defines an "LED" as a Light Emitting Diode.

Watanabe purportedly concerns an electro-optical rain detector for windshields. Referring to Figure 1 of Watanabe, the rain detector includes a light emitting **element** 24 and a light receiving **element** 25, which may be a photodiode.

Initially, it is noted that claim 31 ultimately depends from claim 20, and as such, the above argument with respect to the anticipation rejection of claim 20 applies equally to claim 31. Furthermore, Watanabe does not cure the deficiencies of Teder as applied to claim 20 because Watanabe does not disclose "a housing including a light conducting element **forming a cover** of the housing," as recited in claim 20, from which claim 31depends.

Moreover, the combination of Teder and Watanabe does not disclose each and every feature of claim 31. Specifically, Watanabe does not disclose that its light emitting "element" 24 is a light emitting **diode**, as recited in claim 31. There undoubtedly exists various light emitting "elements," which are not light emitting "diodes."

For at least the foregoing reasons, it is respectfully submitted that Teder and Watanabe, whether considered individually or in combination, do not disclose each and every element of claim 31 and, as such, do not render claim 31 obvious. Furthermore, since claim 32 depends from claim 31, Teder and Watanabe do not render this claim obvious for at least the same reasons.

Withdrawal of the rejections of claims 31 and 32 is therefore respectfully requested.

E. Rejection of Claims 33 and 34

The Examiner has rejected claims 33 and 34 under 35 U.S.C. § 103 as unpatentable over Teder in view of O'Farrell. Respectfully, Applicants traverse for the following reasons.

Claim 33 recites a rain sensor, in which "the at least one receiver includes at least one ambient light sensor." The ambient light sensor is operable to detect the brightness of ambient light passing through the windshield of a motor vehicle. (P. 6, lines 32-36). The ambient light sensor generates a control signal dependent on the ambient light for automatic light control or for a day/night changeover of the windshield wiper control. (P. 6, line 36 to p. 7, line 1). For this purpose, the ambient light sensor may react to specific UV light components present only in natural sunlight, for example, to prevent the vehicle headlights from being unintentionally switched off in brightly illuminated tunnels or underpasses with strong artificial light sources. (P. 7, lines 1-6).

O'Farrell purportedly concerns a vehicle moisture sensor for controlling vehicle accessories, such as windshield wipers. A plurality of light emitting diodes emit wavelengths of inferred energy, which are subsequently received by a sensor after being reflected by a windshield. Moisture on the windshield causes the reflected wavelengths to decrease in power. The decrease in power is detected by the sensor, which generates a control signal for operating the wipers. In the embodiment illustrated in Figure 15 of O'Farrell, a photovoltaic cell 166 is provided for sensing ambient inferred energy emitted from objects in the environment. Cell 166 is provided because ambient inferred energy may cause the moisture sensor to operate incorrectly. (See O'Farrell, col. 10, lines 5-11). To help ensure proper operation of the moisture sensor, the photovoltaic cell 166 generates an indicator signal to a control circuit 46 indicating levels of ambient inferred energy. If the indicator signal is too high, the control circuit is prevented from activating the wipers.

Initially, it is noted that claim 33 ultimately depends from claim 20, and as such, the above argument with respect to the anticipation rejection of claim 20 applies equally to claim 33. Furthermore, O'Farrell does not cure the deficiencies of Teder as applied to claim 20 because O'Farrell does not disclose "a housing including a light conducting element **forming a cover** of the housing," as recited in claim 20.

Moreover, the Examiner's suggested combination of Teder and O'Farrell does not disclose each and every feature of claim 33. In contrast to the ambient light sensor of claim 33, the photovoltaic cell of O'Farrell does not generate a signal dependent on ambient light for automatic light control or for a day/night changeover of the windshield wiper control. Rather, O'Farrell's photovoltaic cell is used for the entirely different purpose of detecting certain levels of inferred energy that interfere with the operation of the moisture sensor. Thus, modifying Teder with the photovoltaic cell of O'Farrell would not result in an "ambient light sensor," as recited in claim 33.

For at least the foregoing reasons, it is respectfully submitted that Teder and O'Farrell, whether considered individually or in combination, do not disclose each and every element of claim 33 and, as such, do not render claim 33 obvious. Furthermore, since claim 34 depends from claim 33, Teder and Watanabe do not render claim 34 obvious for at least the same reasons. Withdrawal of the rejections of claims 33 and 34 is therefore respectfully requested.

F. Rejection of Claims 35 and 36

The Examiner has rejected claims 35 and 36 under 35 U.S.C. §103 as unpatentable over Teder in view of O'Farrell, and further in view of Hasch. Respectfully, Applicants traverse.

Hasch purportedly concerns a sensor system with adjustment for ambient conditions. In the embodiment illustrated in Figure 1 of Hasch, the sensor system consists of optical sensor 10, evaluation unit 30, and control unit 40. The optical unit 10 consists of a transmitter unit 11having a transmitter element 14, and a receiver unit 12 having a receiver element 15. The

transmitter element 14 is disclosed as an **inferred transmitter,** and the receiver element 15 is disclosed as **an inferred receiver**. (See Hasch, col. 5, lines 14-20). In operation, a signal processor of the evaluation unit 30 contains comparators for comparing a reception signal of the receiver element 15 with threshold values corresponding to certain ambient conditions. The evaluation unit recognizes and evaluates changes in the ambient conditions as a function of the comparison, and restores a basic setting of the receiver element 15, such that the sensor system dependably reacts to subsequent changes in the ambient conditions. (See Hasch, Abstract; col. 4, lines 5-57).

Initially, it is noted that claim 35 ultimately depends from claim 20, and as such, the above argument with respect to the anticipation rejection of claim 20 applies equally to claim 35. Furthermore, Hasch does not cure the deficiencies of Teder as applied to claim 20 because Hasch does not disclose "a housing including a light conducting element **forming a cover** of the housing," as recited in claim 20.

Furthermore, the Examiner's suggested combination of Teder and Hasch does not disclose each and every feature of claim 35. Specifically, Hasch does not disclose a separate "ambient light sensor," as recited in claim 33, from which claim 35 ultimately depends. As described above, Hasch evaluates the ambient conditions using the same receiver element as is used to receive signals for the sensor system, and uses the results of internal comparisons to restore a basic setting of the receiver element. In this manner, like O'Farrell, Hasch detects ambient light to ensure that the moisture sensor operates correctly. In contrast, claim 35 recites a separate and distinct "ambient light sensor" for generating a signal dependent on ambient light for an automatic light control or for a day/night changeover of the windshield wiper control in the motor vehicle, not to help improve the functionality of the rain sensor. Thus, Hasch simply does not disclose an "ambient light sensor," as that term is used in claim 33.

Moreover, in contrast to the Examiner's assertions, Hasch does not disclose that receiver element 15 is operable to detect ultraviolet light, as recited in claim 35. The Examiner contends that "it is obvious to one skilled in the art to know that [the receiver element 15 of Hasch] is sensitive to ultraviolet

light because the optical sensor of [Hasch] measures ambient light for a vehicle and therefore would naturally measure sunlight which contains ultraviolet light." (Final Office Action, p. 9, ¶ 1). However, this assertion is entirely incorrect. Quite the contrary, Hasch expressly states that the receiver element and the transmitter element are sensitive to **inferred light**, not ultraviolet light. (See Hasch, col. 5, lines 14-20). Hasch does not detect ultraviolet light because it simply does not need to. Unlike claim 35, Hasch is not directed to detecting ultraviolet ambient light conditions for generating a signal dependent on ambient light for an automatic light control or for a day/night changeover of the windshield wiper control in the motor vehicle. Rather, Hasch detects ambient light conditions for the sole purpose of ensuring that its sensor system functions correctly, and since the Hasch system uses **inferred transmitting and receiving elements**, Hasch is naturally concerned only with ambient **inferred light** that may cause interference, not ultraviolet light, which would presumably have no effect on the inferred transmitting and receiving elements.

For at least the foregoing reasons, it is respectfully submitted that Teder, O'Farrell, and Hasch, whether considered individually or in combination, do not disclose each and every element of claim 35 and, as such, do not render claim 35 obvious. Furthermore, since claim 36 depends from claim 35, Teder, O'Farrell, and Hasch do not render claim 36 obvious for at least the same reasons. Withdrawal of the rejection of claims 35 and 36 is therefore respectfully requested.

G. Rejection of Claims 37, 49 and 40

The Examiner has rejected claims 37, 39 and 40 under 35 U.S.C. §103 as unpatentable over the Teder in view of Zettler. Respectfully, Applicants traverse.

It is noted that claims 37, 39, and 40 each depend from claim 20, and as such, the above argument with respect to the anticipation rejection of claim 20 applies equally to these claims. Furthermore, as stated above, Zettler does not cure the deficiencies of Teder as applied to claim 20 because Zettler does not disclose "a housing including a light conducting element **forming a**

cover of the housing," as recited in claim 20, from which claims 37, 39, and 40 depend.

For at least the foregoing reasons, Teder and Zettler, whether considered individually or in combination, do not disclose, teach, or suggest the subject matter of claims 37, 39, and 40. As such, Teder and Zettler simply do not render these claims obvious. Withdrawal of the rejection of claims 37, 39, and 40 is therefore respectfully requested.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 20-41 should be reversed.

Respectfully submitted,

KENYON & KENYON

Dated: 8/12, 2002

By: for Richard L. Mayer
Richard L. Mayer
Reg. No. 22,490

CUSTOMER NO. 26646
PATENT TRADEMARK OFFICE

(by G. Lu R. No. 36,197)

[10191/1583]

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Gebhard MICHENFELDER et al.
Serial No.	:	09/673,063
Filed	:	January 4, 2001
For	:	RAIN SENSOR
Examiner	:	Michael P. Stafira
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Commissioner for Patents
Washington, DC 20231

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on

Date: 8/12, 2002 Reg. No. 36,197

Signature: _____
Jong H. Lee

APPENDIX TO APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

The claims involved in this appeal, claims 20-41, in their current form after entry of all amendments presented during the course of prosecution, are set forth below:

APPEALED CLAIMS:

20. A rain sensor arranged with respect to a measuring distance in which is arranged a windshield, comprising:

a housing including a light conducting element forming a cover of the

housing; and

a plurality of optical and electronic components mounted in the housing and including:

at least one transmitter for transmitting an electromagnetic wave, and

at least one receiver for receiving the electromagnetic wave, the measuring distance influencing a wave propagation between the at least one transmitter and the at least one receiver such that when a coating forms on the windshield, an output signal sensed by the at least one receiver is changed.

21. The rain sensor according to claim 20, wherein the rain sensor is used in a motor vehicle.

22. The rain sensor according to claim 20, wherein the coating is a result of wetting by precipitation.

23. The rain sensor according to claim 20, wherein:

the light conducting element forms a base plate of the housing and includes a broad area of connection with the windshield.

24. The rain sensor according to claim 23, further comprising:

a common printed board on which is mounted the plurality of optical and electronic components in accordance with SMD technology.

25. The rain sensor according to claim 24, further comprising:

an integrated connector for an electrical connection to a downstream analysis unit, wherein:

the housing corresponds to a rectangular-shaped sensor housing.

26. The rain sensor according to claim 25, further comprising:

contact pins through which the printed circuit board is connected to the integrated connector.

27. The rain sensor according to claim 20, wherein:

the rain sensor is cemented to an inside of the windshield.

28. The rain sensor according to claim 27, further comprising:

a transparent film that is self-adhesive on each side thereof and corresponds to a connection between the windshield and the light conducting element.

29. The rain sensor according to claim 20, wherein:

the output signal is provided to a downstream analysis circuit and includes information with respect to an instantaneous degree of wetting of the windshield.

30. The rain sensor according to claim 29, wherein:

at least one of a windshield wiper mechanism and a vehicle lighting

system is activated as a function of the output signal.

31. The rain sensor according to claim 20, wherein:

the at least one transmitter includes at least one LED.

32. The rain sensor according to claim 31, wherein:

a first one of the at least one receiver that detects an optical signal emitted by the at least one LED includes a photodiode.

33. The rain sensor according to claim 20, wherein:

the at least one receiver includes at least one ambient light sensor.

34. The rain sensor according to claim 33, wherein:

the at least one ambient light sensor includes an aperture angle of approximately 40° inclined upward with an aperture direction in a direction of travel.

35. The rain sensor according to claim 34, wherein:

the at least one ambient light sensor is sensitive to an ultraviolet light.

36. The rain sensor according to claim 35, wherein:

the ultraviolet light corresponds to sunlight.

37. The rain sensor according to claim 20, wherein:

where an infrared light is used, the light conducting element is formed of a black plastic.

38. The rain sensor according to claim 20, wherein:

the light conducting element includes optical areas formed from transparent plastic for the at least one receiver.

39. The rain sensor according to claim 20, wherein:

the light conducting element includes a plastic part formed according to a two-color injection molding process.

40. The rain sensor according claim 20, wherein:

the light conducting element is formed by combining two single-color plastics.

41. The rain sensor according to claim 20, wherein:

the light conducting element includes integrated lens structures for light bundling.

Respectfully submitted,

KENYON & KENYON

Dated: 8/12, 2002

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